LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
B. Kluzniak	7-26-08	7-26-08	N2120351.985 / E5994725.98 (NAD83)	BTNB-R3
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
Gregg Drilling and Testing, Inc.			Offset 67ft R Sta 79+10 NB Alignment	86.286 ft (NAVD88)
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
Mud Rotary			Fraste Multi-drill (track)	5 in. (soil); 4 in. (rock)
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
MC (2.4"), SPT (1.4"), Bulk, 101-Sampler			Automatic, 140 lbs., 30-inch drop	72.9%
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS DURING DRILLING / AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING
Neat Cement Grout backfill			21.6	100 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0		4.5" ASPHALT CONCRETE; 6" UNREINFORCED CONCRETE.												
	1		SILTY SAND (SM), yellowish brown, moist, SAND is fine to medium, with trace subangular serpentinite fragments, with dark brown oxidized nodules. [FILL]		S1										
84.29	2		2.0', serpentinite cobble up to 1/8" diameter.												Augering slow at 2'
	3		SANDY SILT (ML), medium stiff, dark yellowish brown, moist, SAND is fine, with black specks.		S2	9 12 14	26	83				PP = 2.0			
82.29	4		4.0', block of serpentinite, yellowish brown and greenish brown, fine-grained, decomposed (SILT (ML), stiff, dry to moist).		S3	4 8 9	17	83							
	5														
80.29	6														Driller reports easier drilling/harder zone alternating from 6' to 7.5'
	7														
78.29	8		Poorly graded SAND (SP), poorly to moderately compacted, dark brown, moist, trace SILT, fine to medium, with occasional rootlets up to 1/16" diameter.		S4	6 8 10	18	50							
	9														
	10		SANDY SILT (ML), very stiff, yellowish brown to dark yellowish brown, moist, SAND is fine, with dark brown specks, with thin gray CLAY seams.		S5	4 6 9	15	0							
76.29	11		Cuttings are yellowish brown SANDY SILT (COLMA FORMATION?).												
	12				S6	9 13 18	31	100				PP = 2.125, 2.125			
74.29	13		12.5', increased SAND content, increased plasticity.		S7	5 7 7	14	50							Drills faster at 12.5'
72.29	14														
	15														
70.29	16		CLAYEY SAND (SC), medium dense, yellowish brown, moist, fine to medium, with black specks, slightly cemented. [COLMA SAND]		S8	8 11 15	26	83							
	17														
68.29	18		Grades with increased SAND content.		S9	7 11 13	24	100							
	19														
66.29	20		Poorly graded SAND with CLAY (SP-SC), medium dense, yellowish brown, moist, fine to medium, with black specks												
	21				S10	17 23 34	57	94							
64.29	22		Grades dense.												
	23				S11	16 21 22	43	67							
62.29	24														
	25														Slight bouncing of drill rods at 24.5'

(continued)

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REPORT TITLE				HOLE ID
BORING RECORD				BTNB-R3
DIST.	COUNTY	ROUTE	POSTMILE	EA
4	S.F.	101	8.3/9.4	163701
PROJECT OR BRIDGE NAME				
Doyle Drive Replacement Project				
BRIDGE NUMBER	PREPARED BY		DATE	SHEET
34-0161R	T. Carroll		11-3-08	1 of 4

CALTRANS FORMAT DOYLEDRIVE_ARUPLOGS_11-2-08.GPJ ARUP LIBRARY_CALTRANS FORMAT.GLB 11/3/08

Figure

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	25		Poorly graded SAND with CLAY (SP-SC), medium dense, yellowish brown, moist, fine to medium, with black specks												
60.29	26		Grades with iron-oxide mottling, with moderate cementation, with decrease in CLAY content.		S12	19 25 33	58	94							
	27														
58.29	28				S13	13 17 20	37	89							
	29														
56.29	30		Grades light yellowish brown and olive gray, mottled, without iron-oxide staining, with decrease in CLAY content.												
	31				S14	15 19 22	41	94							
54.29	32														
	33				S15	10 15 21	36	100							
52.29	34														
	35														
50.29	36		Poorly graded SAND (SP), dense, yellowish brown to grayish brown, moist, SAND is fine to medium.		S16	20 36 55	91	83							
	37														
48.29	38				S17	11 15 30	45	89							
	39														
46.29	40														
	41		Grades grayish brown with iron-oxide mottling, SAND is fine.		S18	23 36 36	72	83							
44.29	42														
	43		Poorly graded SAND with CLAY, medium dense, yellowish brown, moist, SAND is fine, with very dark brown mottling.		S19	9 11 12	23	89							
42.29	44														
	45														
40.29	46		Lean CLAY with SAND and GRAVEL (CL), medium stiff to stiff, yellowish brown, moist, GRAVEL is fine to coarse, subangular serpentinite fragments. [RESIDUAL SOIL (COLLUVIUM?)]		S20	9 15 27	42	61							Run #3 dropped from barrel, unable to recover
	47		METAMORPHIC ROCK (Serpentinite), fine-grained, yellow and greenish gray, decomposed, very soft (SILT (ML), stiff, horizontally laminated, dry).		S21	30 50/ 5.5"	50/ 5.5"	52							
38.29	48														
	49		METAMORPHIS ROCK (Serpentinite), greenish gray, light gray and reddish brown, intensely weathered, very soft, very intensely fractured, internally crushed and sheared (SILT (ML), medium stiff, moist to wet, trace fine to medium SAND), pervasively sheared, iron-oxide staining throughout rock mass. 50.25', white clay seam infilling.		C22			100	N/A					
36.29	50														
	51		51.5', 0.2' thick zone, horizontally fissured, soft, dark mineral fragments up to 0.01' in diameter.												
34.29	52		52.0' - 52.6', moderately hard, gabbroic with localized shearing.		C23			77	N/A						
	53														
32.29	54														
	55														

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Figure

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	55		METAMORPHIS ROCK (Serpentinite), greenish gray, light gray and reddish brown, intensely weathered, very soft, very intensely fractured, internally crushed and sheared (SILT (ML), medium stiff, moist to wet, trace fine to medium SAND), pervasively sheared, iron-oxide staining throughout rock mass.		C24										
30.29	56														
	57														
28.29	58		58.0', moderately hard, with localized shearing.		C25			100	0						
	59		58.5' - 58.7', white minerals common with tan CLAY infilling.												
26.29	60														
	61		60.5', intensely weathered, very soft, heavy iron-oxide staining.		C26			95	0						
24.29	62		61.6' - 62.0' and 62.4' - 62.6', 45° dipping fractures. 62.05', 62.5', and 62.65', black staining on fracture surfaces (manganese-oxide?).												
	63		62.7', moderately weathered, moderately hard, iron-oxide staining limited to fracture planes.												
22.29	64		63.3', 63.65', and 63.8', light yellowish brown CLAY infilling.												
	65		65.0' - 65.3' and 65.55' - 65.8', zones of very soft serpentinite.		C27			28							
20.29	66		Heavy iron-oxide staining throughout run.												
	67														
18.29	68														
	69				C28				N/A						
			69.1', white secondary mineral deposit on fracture plane, moderately to intensely weathered, moderately hard.		C29			95							
16.29	70		69.6', sub-horizontal shearing planes with heavy iron-oxide staining.												
	71														
14.29	72				C30			100	N/A						
			72.4', light orangish brown staining.												
	73		72.9' - 73.7', intensely weathered, very soft serpentinite.												
12.29	74		IGNEOUG ROCK (Gabbro), aphanitic, very dark gray to black, moderately to slightly weathered, moderately hard to hard, very intensely fractured.		C31			90	N/A						
	75		74.4', thin light gray secondary mineral deposit, localized shearing on through fractures, color change to very dark gray/black.												
10.29	76		76.0', very intensely fractured (entire run).		C32			100	N/A						
	77		76.4' - 77.2', heavy iron-oxide staining.												
8.29	78														
	79		78.3', METAMORPHIC ROCK (Serpentinite), intensely weathered, moderately soft, light greenish gray. 78.5' - 78.7', very soft.		C33			88	N/A						
6.29	80		79.5' - 79.6', very soft (CLAY-like). 79.7' - 80.3', reduced diameter.												
	81		81.0', color change to dark bluish gray.		C34			83	N/A						
4.29	82														
			82.2', very light gray.												
	83														
2.29	84				C35			67	0.3/ 3'						
	85														

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Figure

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	85		84.7', very soft (CLAY-like), bluish gray (gabbroic), secondary white mineral on shearing planes.												
0.29	86		IGNEOUG ROCK (Gabbro), aphanitic, very dark gray to black, moderately to slightly weathered, moderately hard to hard, very intensely fractured.												
	87				C36			100	0.25/ 2.5'						
-1.71	88		87.4' - 87.6', 88.0' - 88.2', and 88.5' - 88.7', severely weathered, very soft. 88.2' - 88.5', reduced diameter.												
	89		88.8', moderately weathered, intensely fractured, moderately hard, dark to very dark gray, predominantly gabbroic.												
-3.71	90		89.5' - 89.8', mechanical breaks. 89.9' - 90.5', very soft (CLAY-like), light bluish gray.		C37			100	0.5/ 2.5'						
	91		90.5' - 91.5', variable softness (very soft to moderately hard).												
-5.71	92		92.0' - 93.7', moderately hard, with horizontal markings from drill bit.		C38			100	N/A						
	93														
-7.71	94		94.2' - 94.6', slightly weathered, very soft.												
	95				C39			100	0.5/ 2.5'						
-9.71	96														
	97		96.5' - 96.8', secondary white mineral on predominant fracture plane, dipping approximately 70°.		C40			60	N/A						
-11.71	98		97.5' - 97.8', intensely fractured, slightly weathered to fresh, very soft.												
	99		97.8' - 100.0', moderately hard, with very soft to soft zones at 98.0', 98.4', and 98.6'.												
-13.71	100		Borehole terminated at a depth of 100 feet on 7/26/2008.												
	101		See Boring Record Legend for soil classification chart and key to test data and sampler type.												
-15.71	102														
	103														
-17.71	104														
	105														
-19.71	106														
	107														
-21.71	108														
	109														
-23.71	110														
	111														
-25.71	112														
	113														
-27.71	114														
	115														

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Figure